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Candidate blood transcriptomic markers of early onset major depression derived from etiological animal models of depression

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Early onset Major Depressive Disorder (MDD) is a serious and prevalent psychiatric illness in adolescents and young adults. Current treatments are not universally effective. Biological markers of early onset MDD could increase diagnostic and treatment specificity, but no such biomarker exists. Our innovative approach to biomarker discovery for early onset MDD combined results from genome-wide transcriptomic profiles in the blood of two animal models of depression, representing the genetic and the environmental, stress-related, etiology of MDD. Transcriptomic differences between the different animal models that showed the same directional expression differences in the blood as in the hippocampus or amygdala, were selected as potential blood markers for MDD.

We then carried out unbiased analyses of the 26 candidate blood transcriptomic markers, selected from the two models, in a sample of 15-19 year old subjects with MDD and subjects with no disorder (ND). A panel of 11 blood markers differentiated participants with early onset MDD from the ND group. A separate, but partially overlapping panel of 18 transcripts distinguished subjects with MDD with or without comorbid anxiety. Based on an interacting protein network analysis, transcripts were differentiated as markers of MDD alone, MDD and anxiety and anxiety alone, suggesting overlapping and separate molecular mechanisms for MDD with and without comorbid anxiety. Thus, our approach could lead to clinically valid diagnostic panels of blood transcripts for early onset MDD, which could reduce diagnostic heterogeneity in this population and has the potential to advance individualized treatment strategies.

Biography

Kathleen Pajer is a Professor of Psychiatry at Dalhousie University Faculty of Medicine in Halifax, Nova Scotia, where she is also Head of the Division of Child and Adolescent Psychiatry. She obtained her M.D. from the University of South Alabama and her M.P.H. at the Yale Graduate School of Public Health. She was also a Robert Wood Johnson Clinical Scholar at the Yale School of Medicine. In collaboration with Dr. Eva Redei, a molecular geneticist at Northwestern University, she is working on the development of a gene expression biomarker panel for the diagnosis of early onset Major Depressive Disorder.

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